

WHAT IS CLAIMED IS:

1           1. A first bridge apparatus comprising:  
2           a first device driver unit for controlling a first  
3 interface unit connected to a first network;  
4           a second device driver unit for controlling a  
5 second interface unit connected to a second network;  
6           a bridging unit for performing a bridging process;  
7 and  
8           a middleware unit, inserted between the bridging  
9 unit and the first device driver unit, that includes  
10          a transmitter for performing priority  
11 processing for a relay of a frame from the bridging unit to  
12 the first device driver unit.

1           2. A bridge apparatus according to claim 1,  
2 further comprising:  
3           a cache table in which session data having high  
4 priorities are preregistered; and  
5           a plurality of first FIFO queues corresponding to  
6 priorities,  
7           wherein the transmitter includes  
8           a header comparator for, upon the reception of  
9 a transmission request for the frame to be relayed from the  
10 bridging unit to the first device driver unit, searching  
11 the cache table and extracting a priority based on headers  
12 included in a second to a fourth OSI layer of the frame,  
13 and for adding the transmission request to one of the first  
14 FIFO queues in accordance with the priority that is  
15 extracted, and  
16          a synthesization unit for, in accordance with a

17 priority for the first FIFO queue, outputting the  
18 transmission request from the first FIFO queue to the first  
19 device driver unit.

1           3. A bridge apparatus according to claim 1,  
2 further comprising:  
3           a first cache table, in which first session data  
4 are predesignated;  
5           a second cache table, used when a session is  
6 established;  
7           a first FIFO queue; and  
8           a second FIFO queue,  
9           wherein the middleware unit includes  
10           a first header comparator for, when a  
11 transmission request is issued for the frame to be relayed  
12 from the bridging unit to the first device, extracting  
13 second session data from headers of a second to a fourth  
14 OSI layer in the frame and, when the second session data  
15 are registered in the second cache table, adding the  
16 transmission request to the first FIFO queue; for, when the  
17 second session data are registered neither in the first  
18 cache table nor in the second cache table and the frame to  
19 be relayed is a specific, predesignated frame, registering  
20 the second session data in the second cache table and  
21 adding the transmission request to the first FIFO queue;  
22 for, when the second session data are registered in the  
23 first cache table but not in the second cache table and the  
24 frame is not a specific, predesignated frame, adding the  
25 transmission request to the second FIFO buffer; or for,  
26 when the second session data are registered neither in the

27 first nor the second cache tables, adding the transmission  
28 request to the second FIFO queue, and  
29 a synthesization unit for outputting to the  
30 first device driver unit, in the named order, the  
31 transmission requests in the first FIFO queue and in the  
32 second FIFO queue.

1 4. A bridge apparatus according to claim 3,  
2 wherein the middleware unit includes:  
3 the header comparator for activating a frame  
4 monitor timer when the second session data are not  
5 registered in the second cache table but are registered in  
6 the first cache table, and when the frame to be relayed is  
7 a specific predesignated frame; and  
8 a monitor unit for, when the value of the frame  
9 monitor timer has reached a predetermined value, deleting  
10 from the second cache table the second session data that  
11 correspond to the frame monitor timer.

1 5. A bridge apparatus comprising:  
2 a first device driver unit for controlling a first  
3 interface unit connected to a first network;  
4 a second device driver unit for controlling a  
5 second interface unit connected to a second network;  
6 a bridging unit for determining whether the  
7 address of a frame received from the first or the second  
8 network is registered in an address table, and for  
9 performing bridging processing for the frame; and  
10 a middleware unit including  
11 a transmitter, inserted between the bridging

12 unit and the first device driver unit, for performing the  
13 priority processing for a first frame to be relayed from  
14 the bridging unit to the first device driver unit, and  
15 a receiver, inserted between the bridging unit  
16 and the second device driver unit, for performing the  
17 priority processing for a second frame to be relayed from  
18 the first device driver unit to the bridging unit.

1 6. A bridge apparatus according to claim 5,  
2 further comprising:

3 a cache table in which session data are  
4 preregistered;

5 a first FIFO queue for the transmitter; and

6 a second FIFO queue for the receiver,

7 wherein the transmitter includes

8 a first header comparator for, upon the  
9 reception of a transmission request for the first frame to  
10 be relayed from the bridging unit to the first device  
11 driver unit, searching the cache table and extracting a  
12 first priority, based on headers that are included in a  
13 second to a fourth OSI layer in the first frame, and for,  
14 in accordance with the first priority, adding the  
15 transmission request for the first frame to the first FIFO  
16 queue, and

17 a first synthesization unit for transmitting,  
18 in accordance with the first priority, the transmission  
19 request from the first FIFO queue to the first device  
20 driver unit,

21 and wherein the receiver includes

22 a second header comparator for, upon the

23 reception of a bridging request for the second frame,  
24 searching the cache table and extracting a second priority,  
25 based on headers that are included in a second to a fourth  
26 OSI layer in the second frame, and, for, in accordance with  
27 the second priority, adding the bridging request for the  
28 second frame to the second FIFO queue, and  
29 a second synthesization unit for transmitting,  
30 in accordance with the second priority, the bridging  
31 request from the second FIFO queue to the bridging unit.

1 7. A bridge apparatus comprising:  
2 a first device driver unit for controlling a first  
3 interface unit connected to a first network;  
4 a second device driver unit for controlling a  
5 second interface unit connected to a second network;  
6 a bridging unit for examining the address of a  
7 frame received from the first or the second network to  
8 determine whether the address is registered in an address  
9 table, and for performing bridging processing for the  
10 frame;  
11 a middleware unit, inserted between the bridging  
12 unit and the first device driver unit;  
13 a first cache table, in which first session data  
14 having a high priority are predesignated;  
15 a second cache table, used when a session is  
16 established;  
17 a first FIFO queue;  
18 a second FIFO queue;  
19 a third FIFO queue; and  
20 a fourth FIFO queue,

21                wherein the middleware unit includes  
22                a first header comparator for, when a  
23        transmission request is issued for a first frame to relayed  
24        from the bridging unit to the first device driver unit,  
25        extracting second session data from headers of a second to  
26        a fourth OSI layer in the first frame and, when the second  
27        session data are registered in the second cache table,  
28        adding the transmission request to the first FIFO queue;  
29        for, when the second session data are registered in the  
30        first cache table but not in the second cache table and the  
31        first frame to be relayed is a specific, predesignated  
32        frame, registering the second session data in the second  
33        cache table and adding the transmission request to the  
34        first FIFO queue; for, when the second session data are  
35        registered in the first cache table but not in the second  
36        cache table and the first frame is not a specific,  
37        predesignated frame, adding the transmission request to the  
38        second FIFO buffer; or for, when the second session data  
39        are registered neither in the first nor the second cache  
40        tables, adding the transmission request to the second FIFO  
41        queue,  
42                a first synthesization unit for outputting to  
43        the first device driver unit, in the named order, the  
44        transmission requests in the first FIFO queue and in the  
45        second FIFO queue,  
46                a second header comparator for, when a bridging  
47        request is issued for a second frame to be relayed from the  
48        first device driver unit to the bridging unit, extracting  
49        third session data from headers of a second to a fourth OSI  
50        layer in the second frame and, when the third session data

51 are registered in the second cache table, adding the  
52 bridging request to the third FIFO queue; for, when the  
53 third session data are registered in the first cache table  
54 but not in the second cache table and the second frame to  
55 be relayed is a specific, predesignated frame, registering  
56 the third session data in the second cache table and adding  
57 the bridging request to the third FIFO queue; for, when the  
58 third session data are registered in the first cache table  
59 but not in the second cache table and the second frame is  
60 not a specific, predesignated frame, adding the bridging  
61 request to the fourth FIFO queue; or for, when the second  
62 session data are registered neither in the first nor in the  
63 second cache tables, adding the bridging request to the  
64 fourth FIFO queue, and  
65 a second synthesization unit for outputting to  
66 the bridging unit, in the named order, the bridging  
67 requests in the third FIFO queue and in the fourth FIFO  
68 queue.

1 8. A bridge apparatus according to claim 7,  
2 wherein the middleware unit includes:  
3 the first header comparator for activating a first  
4 frame monitor timer when the second session data are not  
5 registered in the second cache table but are registered in  
6 the first cache table, and when the first frame to be  
7 relayed is a specific predesignated frame; the second  
8 header comparator for activating a second frame monitor  
9 timer when the third session data are not registered in the  
10 second cache table but are registered in the first cache  
11 table, and when the second frame to be relayed is a

12 specific predesignated frame; and  
13           a monitor unit for, when the value of the first  
14 frame monitor timer has reached a predetermined value,  
15 deleting from the second cache table the second session  
16 data that correspond to the first frame monitor timer, and  
17 for, when the value of the second frame monitor timer has  
18 reached a predetermined value, deleting from the second  
19 cache table the third session data that correspond to the  
20 second frame monitor timer.

1           9. A bridge apparatus comprising:  
2           a first device driver unit for controlling a first  
3 interface unit connected to a first network;  
4           a second device driver unit for controlling a  
5 second interface unit connected to a second network;  
6           a bridging unit for determining whether the  
7 address of a frame received from the first or the second  
8 network is registered in an address table, and for  
9 performing bridging processing for the frame;  
10          a first middleware unit including  
11           a first transmitter, inserted between the  
12 bridging unit and the first device driver unit, for  
13 performing the priority processing for a first frame to be  
14 relayed from the bridging unit to the first device driver  
15 unit, and  
16           a first receiver, inserted between the bridging  
17 unit and the first device driver unit, for performing the  
18 priority processing for a second frame to be relayed from  
19 the first device driver unit to the bridging unit; and  
20          a second middleware unit including



21                   a second transmitter, inserted between the  
22 bridging unit and the second device driver unit, for  
23 performing the priority processing for a third frame to be  
24 relayed from the bridging unit to the second device driver  
25 unit, and

26                   a second receiver, inserted between the  
27 bridging unit and the second device driver unit, for  
28 performing the priority processing for a third frame to be  
29 relayed from the second device driver unit to the bridging  
30 unit.

1                   10. A bridge apparatus according to claim 9,  
2 further comprising:  
3                   a cache table in which session data having a high  
4 priority are preregistered;  
5                   a transmission FIFO queue, used for the second  
6 transmitter and corresponding to a priority; and  
7                   a reception FIFO queue, used for the second  
8 receiver and corresponding to a priority,  
9                   wherein the second transmitter includes  
10                   a transmission request header comparator for,  
11 upon the reception of a transmission request for the third  
12 frame to be relayed from the bridging unit to the second  
13 device driver unit, searching the cache table and, based on  
14 headers that are included in a second to a fourth OSI layer  
15 in the third frame, extracting a transmission priority and,  
16 in accordance with the transmission priority, adding the  
17 transmission request for the third frame to the  
18 transmission FIFO queue, and  
19                   a transmission request synthesization unit for

20 transmitting, in accordance with the transmission priority,  
21 the transmission request from the transmission FIFO queue  
22 to the second device driver unit,  
23 and wherein the second receiver includes  
24 a bridging request header comparator for, upon  
25 the reception of a bridging request for the fourth frame to  
26 be relayed from the second device driver unit to the  
27 bridging unit, searching the cache table and, based on  
28 headers that are included in a second to a fourth OSI layer  
29 in the fourth frame, extracting a reception priority and,  
30 in accordance with the reception priority, adding the  
31 bridging request for the fourth frame to the reception FIFO  
32 queue, and  
33 a bridging request synthesization unit for, in  
34 accordance with the reception priority, transmitting the  
35 bridging request from the reception FIFO queue to the  
36 bridging unit.

1 11. A bridge apparatus comprising:  
2 a first device driver unit for controlling a first  
3 interface unit connected to a first network;  
4 a second device driver unit for controlling a  
5 second interface unit connected to a second network;  
6 a bridging unit for performing bridging  
7 processing;  
8 a middleware unit, inserted between the bridging  
9 unit and the first and second device driver units;  
10 a first cache table, in which first session data  
11 are predesignated;  
12 a second cache table, used when a session is

13 established;  
14           a third cache table, in which fourth session data  
15 are predesignated;  
16           a fourth cache table, used when a session is  
17 established;  
18           a first FIFO queue;  
19           a second FIFO queue;  
20           a third FIFO queue;  
21           a fourth FIFO queue;  
22           a fifth FIFO queue;  
23           a sixth FIFO queue;  
24           a seventh FIFO queue; and  
25           an eighth FIFO queue,  
26           wherein the middleware unit includes  
27           a first header comparator for, when a  
28 transmission request is issued for a first frame to relayed  
29 from the bridging unit to the first device driver unit,  
30 extracting second session data from headers of a second to  
31 a fourth OSI layer in the first frame and, when the second  
32 session data are registered in the second cache table,  
33 adding the transmission request for the first frame to the  
34 first FIFO queue; for, when the second session data are  
35 registered in the first cache table but not in the second  
36 cache table and the first frame to be relayed is a specific,  
37 predesignated frame, registering the second session data in  
38 the second cache table and adding the transmission request  
39 to the first FIFO queue; for, when the second session data  
40 are registered in the first cache table but not in the  
41 second cache table and the first frame is not a specific,  
42 predesignated frame, adding the transmission request to the

43 second FIFO buffer; or for, when the second session data  
44 are registered neither in the first nor the second cache  
45 tables, adding the transmission request to the second FIFO  
46 queue,

47               a first synthesization unit for outputting to  
48 the first device driver unit, in the named order, the  
49 transmission requests for the first frame in the first FIFO  
50 queue and in the second FIFO queue,

51               a second header comparator for, when a bridging  
52 request is issued for a second frame to be relayed from the  
53 first device driver unit to the bridging unit, extracting  
54 third session data from headers of a second to a fourth OSI  
55 layer in the second frame and, when the third session data  
56 are registered in the second cache table, adding the  
57 bridging request for the second frame to the third FIFO  
58 queue; for, when the third session data are registered in  
59 the first cache table but not in the second cache table and  
60 the second frame to be relayed is a specific, predesignated  
61 frame, registering the third session data in the second  
62 cache table and adding the bridging request to the third  
63 FIFO queue; for, when the third session data are registered  
64 in the first cache table but not in the second cache table  
65 and the second frame is not a specific, predesignated frame,  
66 adding the bridging request to the fourth FIFO queue; or  
67 for, when the second session data are registered neither in  
68 the first nor in the second cache tables, adding the  
69 bridging request to the fourth FIFO queue,

70               a second synthesization unit for outputting to  
71 the bridging unit, in the named order, the bridging  
72 requests for the second frame in the third FIFO queue and

73 in the fourth FIFO queue,  
74 a third header comparator for, when a  
75 transmission request is issued for a third frame to relayed  
76 from the bridging unit to the second device driver unit,  
77 extracting fifth session data from headers of a second to a  
78 fourth OSI layer in the third frame and, when the fifth  
79 session data are registered in the fourth cache table,  
80 adding the transmission request for the third frame to the  
81 fifth FIFO queue; for, when the fifth session data are  
82 registered in the third cache table but not in the fourth  
83 cache table and the third frame to be relayed is a specific,  
84 predesignated frame, registering the fifth session data in  
85 the fourth cache table and adding the transmission request  
86 to the fifth FIFO queue; for, when the fifth session data  
87 are registered in the third cache table but not in the  
88 fourth cache table and the third frame is not a specific,  
89 predesignated frame, adding the transmission request to the  
90 sixth FIFO buffer; or for, when the fifth session data are  
91 registered neither in the third nor the fourth cache tables,  
92 adding the transmission request to the sixth FIFO queue,  
93 a third synthesization unit for outputting to  
94 the second device driver unit, in the named order, the  
95 transmission requests for the third frame in the fifth FIFO  
96 queue and in the sixth FIFO queue,  
97 a fourth header comparator for, when a bridging  
98 request is issued for a fourth frame to be relayed from the  
99 second device driver unit to the bridging unit, extracting  
100 sixth session data from headers of a second to a fourth OSI  
101 layer in the fourth frame and, when the sixth session data  
102 are registered in the fourth cache table, adding the

103 bridging request for the fourth frame to the seventh FIFO  
104 queue; for, when the sixth session data are registered in  
105 the third cache table but not in the fourth cache table and  
106 the fourth frame to be relayed is a specific, predesignated  
107 frame, registering the sixth session data in the fourth  
108 cache table and adding the bridging request to the seventh  
109 FIFO queue; for, when the sixth session data are registered  
110 in the third cache table but not in the fourth cache table  
111 and the fourth frame is not a specific, predesignated frame,  
112 adding the bridging request to the eighth FIFO queue; or  
113 for, when the sixth session data are registered neither in  
114 the third nor in the fourth cache tables, adding the  
115 bridging request to the eighth FIFO queue, and  
116                   a fourth synthesization unit for outputting to  
117 the bridging unit, in the named order, the bridging  
118 requests for the fourth frame in the seventh FIFO queue and  
119 in the eighth FIFO queue.

1           12. A bridge apparatus according to claim 11,  
2 further comprising:  
3           a first monitor timer;  
4           a second monitor timer;  
5           a third monitor timer; and  
6           a fourth monitor timer,  
7           wherein the middleware unit includes  
8           a monitor unit for deleting the second session  
9 data from the second cache table when a specific value is  
10 reached in the first monitor timer, for deleting the third  
11 session data from the second cache table when a specific  
12 value is reached in the second monitor timer, for deleting

13 the fourth session data from the fourth cache table when a  
14 specific value is reached in the third monitor timer, and  
15 for deleting the fifth session data from the fourth cache  
16 table when a specific value is reached in a fourth monitor  
17 timer.

1           13. A bridge apparatus comprising:  
2           a first device driver unit for controlling a first  
3 interface unit connected to a first network;  
4           a second device driver unit for controlling a  
5 second interface unit connected to a second network;  
6           a bridging unit for performing bridging  
7 processing;  
8           a cache table in which session data having a high  
9 priority are stored;  
10          a first FIFO queue corresponding to a priority;  
11          a second FIFO queue corresponding to a priority,  
12 wherein the bridging unit includes  
13          a bridging processor connected to the first  
14 device driver unit and the second device driver unit,  
15          a first header comparator for, when a first  
16 bridging request for a first frame to be relayed is  
17 received from the first device driver unit, searching the  
18 cache table and extracting a first priority for the first  
19 bridging request, based on headers that are included in a  
20 second to a fourth OSI layer in the first frame, and for,  
21 in accordance with the first priority, adding the first  
22 bridging request to the first FIFO queue,  
23          a first synthesization unit for transmitting,  
24 in accordance with the first priority, the first bridging

25 request from the first FIFO queue to the bridging processor,  
26 a second header comparator for, when a second  
27 bridging request for a second frame to be relayed is  
28 received from the second device driver unit, searching the  
29 cache table and extracting a second priority for the second  
30 bridging request, based on headers that are included in a  
31 second to a fourth OSI layer in the second frame, and for,  
32 in accordance with the second priority, adding the second  
33 bridging request to the second FIFO queue, and  
34 a second synthesization unit for transmitting,  
35 in accordance with the second priority, the second bridging  
36 request from the second FIFO queue to the bridging  
37 processor.

1 14. A bridge apparatus comprising:  
2 a first device driver unit for controlling a first  
3 interface unit connected to a first network;  
4 a second device driver unit for controlling a  
5 second interface unit connected to a second network;  
6 a bridging processor for performing bridging  
7 processing;  
8 a first cache table, in which first session data  
9 having a high priority are predesignated;  
10 a second cache table, used when a session is  
11 established;  
12 a first FIFO queue;  
13 a second FIFO queue;  
14 a third FIFO queue; and  
15 a fourth FIFO queue,  
16 wherein the middleware unit includes



17                   a first header comparator for, when a bridging  
18 request is issued for a first frame to relayed from the  
19 first device driver unit to the bridging processor,  
20 extracting second session data from headers of a second to  
21 a fourth OSI layer in the first frame and, when the second  
22 session data are registered in the second cache table,  
23 adding the bridging request for the first frame to the  
24 first FIFO queue; for, when the second session data are  
25 registered in the first cache table but not in the second  
26 cache table and the first frame to be relayed is a specific,  
27 predesignated frame, registering the second session data in  
28 the second cache table and adding the bridging request to  
29 the first FIFO queue; for, when the second session data are  
30 registered in the first cache table but not in the second  
31 cache table and the first frame is not a specific,  
32 predesignated frame, adding the bridging request to the  
33 second FIFO buffer; or for, when the second session data  
34 are registered neither in the first nor the second cache  
35 tables, adding the bridging request to the second FIFO  
36 queue,

37                   a first synthesization unit for outputting to  
38 the bridging processor, in the named order, the bridging  
39 requests for the first frame in the first FIFO queue and in  
40 the second FIFO queue,

41                   a second header comparator for, when a bridging  
42 request is issued for a second frame to be relayed from the  
43 second device driver unit to the bridging processor,  
44 extracting third session data from headers of a second to a  
45 fourth OSI layer in the second frame and, when the third  
46 session data are registered in the second cache table,

47 adding the bridging request for the second frame to the  
48 third FIFO queue; for, when the third session data are  
49 registered in the first cache table but not in the second  
50 cache table and the second frame to be relayed is a  
51 specific, predesignated frame, registering the third  
52 session data in the second cache table and adding the  
53 bridging request to the third FIFO queue; for, when the  
54 third session data are registered in the first cache table  
55 but not in the second cache table and the second frame is  
56 not a specific, predesignated frame, adding the bridging  
57 request to the fourth FIFO queue; or for, when the second  
58 session data are registered neither in the first nor in the  
59 second cache tables, adding the bridging request to the  
60 fourth FIFO queue, and  
61 a second synthesization unit for outputting to  
62 the bridging processor, in the named order, the bridging  
63 requests for the second frame in the third FIFO queue and  
64 in the fourth FIFO queue.

1 15. A bridge apparatus according to claim 14,  
2 further comprising:  
3 a first monitor timer;  
4 a second monitor timer; and  
5 a monitor unit for deleting the second session  
6 data from the second cache table when a specific value is  
7 reached in the first monitor timer, for deleting the third  
8 session data from the second cache table when a specific  
9 value is reached in the second monitor timer, for deleting  
10 the fourth session data from the fourth cache table when a  
11 specific value is reached in the third monitor timer, and

12 for deleting the fifth session data from the fourth cache  
13 table when a specific value is reached in a fourth monitor  
14 timer.

1           16. A bridge apparatus according to claim 3,  
2 wherein the specific frame is a frame, including an RTP  
3 frame, defined by a communication protocol equal to or  
4 higher than a fifth OSI layer.

1           17. A bridge apparatus according to claim 2,  
2 wherein the session data include an MAC address that is  
3 pertinent to the second OSI layer of the frame, a protocol  
4 number and an IP address that are pertinent to the third  
5 OSI layer, and a port number that is pertinent to the  
6 fourth OSI layer.

1           18. A bridge apparatus according to claim 3,  
2 wherein the first session data include an MAC address that  
3 is pertinent to the second OSI layer of the frame, a  
4 protocol number and an IP address that are pertinent to the  
5 third OSI layer, and a port number that is pertinent to the  
6 fourth OSI layer.

1           19. A bridge apparatus according to claim 7,  
2 wherein the second and third session data include an MAC  
3 address that is pertinent to the second OSI layer of the  
4 frame, a protocol number and an IP address that are  
5 pertinent to the third OSI layer, and a port number that is  
6 pertinent to the fourth OSI layer.

1           20. A bridge apparatus according to claim 11,  
2 wherein the fourth session data include an MAC address that  
3 is pertinent to the second OSI layer of the frame, a  
4 protocol number and an IP address that are pertinent to the  
5 third OSI layer, and a port number that is pertinent to the  
6 fourth OSI layer.

1           21. A bridge apparatus according to claim 11,  
2 wherein the fifth and sixth session data include an MAC  
3 address that is pertinent to the second OSI layer of the  
4 frame, a protocol number and an IP address that are  
5 pertinent to the third OSI layer, and a port number that is  
6 pertinent to the fourth OSI layer.

1           22. A bridge method for a bridge apparatus that  
2 relays frames for a second network and a first network  
3 comprising the steps of:  
4           receiving from the second network a specific frame  
5 to be relayed to the first network;  
6           when session data extracted session data from  
7 headers of a second to a fourth OSI layer of the specific  
8 frame satisfy a predetermined condition, providing a higher  
9 priority for the specific frame in a transmission queue and  
10 transmitting the specific frame to the first network.

1           23. A bridge method, for a bridge apparatus that  
2 relays a second network and a first network, comprising  
3 steps of:  
4           receiving a specific frame to be relayed from the

5 second network to the first network and extracting session  
6 data from headers of a second to a fourth OSI layer in the  
7 specific frame;

8           when the session data satisfy a predetermined  
9 condition, increasing a transmission priority for the  
10 specific frame and transmitting the specific frame to the  
11 first network;

12           receiving a specific frame to be relayed from the  
13 first network to the second network and extracting session  
14 data from headers of a second to a fourth OSI layer in the  
15 specific frame;

16           when the session data satisfy a predetermined  
17 condition, increasing a bridging priority for the specific  
18 frame and transmitting the specific frame to the second  
19 network.

1           24. A bridge method, for a bridge apparatus that  
2 relays a second network and a first network, comprising  
3 steps of:

4           receiving a specific frame to be relayed from the  
5 second network to the first network and extracting session  
6 data from headers of a second to a fourth OSI layer in the  
7 specific frame;

8           when the session data satisfy a predetermined  
9 condition, increasing a bridging priority for the specific  
10 frame and performing bridging processing;

11           thereafter, when the session data extracted from  
12 the specific frame satisfy a predetermined condition,  
13 increasing a transmission priority for the specific frame  
14 and transmitting the specific frame to the first network;

15           receiving a specific frame to be relayed from the  
16 first network to the second network, and extracting session  
17 data from headers of a second to a fourth OSI layer in the  
18 specific frame;

19           when the session data satisfy a predetermined  
20 condition, increasing a bridging priority for the specific  
21 frame and performing bridging processing;

22           thereafter, extracting session data from the  
23 headers of the second to the fourth OSI layer in the  
24 specific frame; and

25           when the session data extracted from the specific  
26 frame satisfy a predetermined condition, increasing a  
27 transmission priority for the specific frame and  
28 transmitting the specific frame to the second network.

1           25. A bridge method for a bridge apparatus that  
2 relays frames for a second network and a first network  
3 comprising the steps of:

4           receiving from the second network a specific frame  
5 to be relayed to the first network;

6           when session data extracted from headers of a  
7 second to a fourth OSI layer in the specific frame satisfy  
8 a predetermined condition, providing a higher priority for  
9 the specific frame in a bridging queue, performing bridging  
10 processing and transmitting the specific frame to the first  
11 network;

12           receiving from the first network a specific frame  
13 addressing a transmission destination connected to the  
14 second network;

15           when session data extracted from headers of a

16 second to a fourth OSI layer in the specific frame satisfy  
17 a predetermined condition, providing a higher priority for  
18 the specific frame in a bridging queue, performing bridging  
19 processing, and transmitting the specific frame to the  
20 second network.

1           26. A bridge method, for a bridge apparatus that  
2 comprises a device driver for controlling interface units  
3 connected to a plurality of networks, a bridging unit, for  
4 comparing the address of a frame received via each of the  
5 networks with each MAC address registered in an address  
6 table and for performing bridging processing for the frame,  
7 and a middleware unit, for controlling the interface unit  
8 between the bridging unit and the device driver, comprising  
9 steps of:

10           when the bridging unit issues transmission  
11 requests for relaying specific sequential frames to a  
12 predetermined transmission destination, upon the reception  
13 of a first transmission request, the middleware unit, for  
14 confirming header data included in a first specific frame,  
15 extracting session data from headers of a second to a  
16 fourth OSI layer of the first specific frame, registering  
17 the session data in a cache table, increasing a  
18 transmission priority for the first specific frame, and  
19 issuing a transmission request to the device driver; and

20           when the succeeding specific frames are to be  
21 sequentially transmitted, the middleware unit comparing the  
22 session data registered in the cache table with session  
23 data extracted from the second to the fourth OSI layers of  
24 the succeeding specific frames, transmission priorities

25 being increased for specific succeeding frames, and  
26 transmission requests being output to the device driver.

1           27. A bridge method, according to claim 26,  
2 further comprising steps of:  
3           when the device driver issues bridging requests  
4 for specific sequential frames, which are output by a  
5 predetermined transmission source and which are defined by  
6 a communication protocol as being equal to or higher than a  
7 fifth OSI layer, upon the reception of a first bridging  
8 request, the middleware unit confirming header data in a  
9 first specific frame, extracting session data from headers  
10 for a second to a fourth OSI layer in the first specific  
11 frame, registering the session data in a cache table,  
12 increasing a bridging priority for the first specific frame  
13 and issuing a bridging request to the bridging unit; and,  
14           when succeeding specific frames are to be  
15 sequentially received, the middleware unit comparing the  
16 session data registered in the cache table with session  
17 data extracted from second to fourth OSI layers in the  
18 succeeding specific frames, increasing bridging priorities  
19 for the succeeding specific frames, and outputting bridging  
20 requests to the bridging unit.

1           28. A bridge method, according to claim 26,  
2 wherefor, when session data are registered in the cache  
3 table, monitoring of the session data is continuously  
4 performed by the middleware unit until a predetermined  
5 period of time has elapsed and no transmission request has  
6 been received from the bridging unit for a frame having the



7 session data.

1           29. A bridge method, according to claim 27,  
2 wherefor the middleware unit includes a monitor timer; and  
3 wherefor, when a value held by the monitor timer reaches a  
4 predetermined value, session data are deleted from the  
5 cache table by the middleware unit.

1           30. A bridge method, according to claim 22,  
2 further comprising a step of:  
3           receiving the specific frame that is to be relayed  
4 by the second network to the first network and that is  
5 defined by a communication protocol equal to or higher than  
6 the fifth OSI layer and that includes an RTP frame.

1           31. A bridge method, according to claim 22,  
2 further comprising a step of:  
3           extracting the session data, which include an MAC  
4 address pertinent to the second OSI layer for the specific  
5 frame, a protocol number and an IP address pertinent to the  
6 third OSI layer, and a port number pertinent to the fourth  
7 OSI layer.